Claim Amendments

Please amend the claims to be as follows.

1. (currently amended) A method of determining a measure of image complexity, the method comprising:

subdividing an image into a plurality of small image regions;

performing multiple statistical tests to determine the similarity of at least one pair of adjacent image regions; and

grouping the at least one pair of adjacent image regions together into one new region if said pair passes the multiple statistical tests, wherein the multiple statistical tests include a test of whether the adjacent image regions have a ratio of max (σ_1^2, σ_2^2) divided by min(σ_1^2, σ_2^2) is less than a threshold value, wherein σ_1^2 and σ_2^2 comprise the variances of the adjacent image regions.

2. (original) The method of claim 1, further comprising:

iterating said steps of performing the multiple statistical tests for pairs of adjacent image regions and grouping the pairs of image regions that pass the multiple statistical tests until no remaining pairs of adjacent image regions in the image pass the multiple statistical tests.

3. (original) The method of claim 2, further comprising:

making a weighted count of the resulting image regions, where weights depend on a geometrical characteristic of the image regions.

4. (original) The method of claim 1, wherein the multiple statistical tests include a test of whether the adjacent image regions are determined to have sufficiently similar variances in their data.

5. (original) The method of claim 4, wherein the adjacent image regions are determined to have sufficiently similar variances if a statistical f-test is passed.

6. (canceled)

7. (currently amended) The method of [[claim 4]] claim 1, wherein the multiple statistical tests further include a test of whether data for the adjacent image regions have sufficiently similar means in their data.

8. (original) The method of claim 7, wherein the adjacent image regions are determined to have sufficiently similar means if a statistical t-test is passed.

9. (original) The method of claim 1, wherein the multiple statistical tests include both a statistical f-test and a statistical t-test.

10. (original) The method of claim 1, wherein the method is used to guide segmentation of an image into arbitrarily-shaped regions.

11. (currently amended) A device for processing an image frame, the device comprising:

a complexity measuring apparatus configured to subdivide the image frame into a plurality of small image regions, perform multiple statistical tests to determine the similarity of at least one pair of adjacent image regions; and group the at least one pair of adjacent image regions together into one new region if said pair passes the multiple statistical tests, wherein the multiple statistical tests include a test of whether the adjacent image regions have a ratio of max (σ_1^2, σ_2^2)

divided by $\min(\sigma_1^2, \sigma_2^2)$ that is less than a threshold value, wherein σ_1^2 and σ_2^2 comprise the variances of the adjacent image regions.

12. (original) The device of claim 11, further comprising:

an image segmenter configured to receive a measure of complexity of the image frame from the complexity measuring apparatus.

13. (currently amended) A system for encoding and decoding image frames of a video sequence, the system comprising:

an encoder for encoding the image frame of the video sequence including at least a complexity measuring apparatus and an image segmenter; and

a decoder for receiving an encoded bit stream from the encoder and configured to reconstruct the video sequence therefrom,

wherein the complexity measuring apparatus is configured to subdivide the image frame into a plurality of small image regions, perform multiple statistical tests to determine the similarity of at least one pair of adjacent image regions; and group the at least one pair of adjacent image regions together into one new region if said pair passes the multiple statistical tests, wherein the multiple statistical tests include a test of whether a ratio of $\max(\sigma_1^2, \sigma_2^2)$ divided by $\min(\sigma_1^2, \sigma_2^2)$ that is less than a threshold value, wherein σ_1^2 and σ_2^2 comprise the variances of the adjacent image regions.